IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Hisashi Ohtani et al. Art Unit : 2871
Serial No. : 09/588,996 Examiner : David Chung
Filed : June 6, 2000
Title : ACTIVE MATRIX LIQUID CRYSTAL WITH CAPACITOR BELOW DISCLINATION REGION

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Commissioner for Patents
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REPLY TO ACTION OF JUNE 2, 2005

Applicant requests reconsideration and allowance of the claims in view of the following remarks. In particular, applicant asks that the Examiner consider and respond to the issues raised below (many of which were raised in applicant's prior reply). Applicant notes that, with the exception of one additional sentence in the response to arguments section of the action ("Because disinclination naturally occurs as a result of a plurality of factors, one of which is the rubbing direction, the amendment to the claims does not patentably distinguish them over the prior art."), the current action is identical to the prior one, and provides no meaningful response to the positions raised in the prior reply.

Claims 1, 2, 4-7, 11-16, 20-22, and 26-38 are pending, with claims 1, 2, 4, 5, 11, 14, 20, 26 and 29 being independent.

Applicant acknowledges with appreciation the Examiner's allowance of claim 1, and the Examiner's indication that claims 32-38 are directed to allowable subject matter.

Claims 14-16 and 20-22, including independent claims 14 and 20, have been rejected as being anticipated by, or obvious in view of, Sato (U.S. Patent No. 5,708,485).

Applicant requests reconsideration and withdrawal of this rejection for at least the reason that Sato does not describe or suggest liquid crystal molecules oriented by rubbing in one direction from one corner of the pixel, as recited in each of claims 16 and 20. The action does not even attempt to show where this feature of the claims is shown by Sato. Indeed, at page 7, the action explicitly acknowledges that "Sato et al. does not disclose rubbing an alignment layer in one direction from one corner of the pixel."

As best understood, the action's indication that "[b]ecause disinclination naturally occurs as a result of a plurality of factors, one of which is the rubbing direction, the amendment to the claims does not patentably distinguish them over the prior art[,]" as quoted above, is meant to imply that this feature would be inherent in Sato's device because rubbing is one way of obtaining disinclination, and because, as also argued in the action, disinclination is inherent in Sato's device. Applicant strongly disagrees and respectfully submits that it defies logic to assert that the alleged inherency of disinclination in Sato's device would have led one of ordinary skill in the art to actively perform a particular technique (i.e., the recited rubbing in one direction from one corner) to control the disinclination. One simply does not follow from the other.

Accordingly, for at least these reasons, the rejection should be withdrawn.

Claim 2 also has been rejected as being anticipated by, or obvious in view of, Sato. Similarly to claims 16 and 20, claim 2 recites "said capacitor covers at least an active region of said switching element that is overlapped with one corner of a pixel where disclination is likely to occur due to a rubbing operation beginning in said corner." As with claims 16 and 20, Sato does not describe or suggest a rubbing operation beginning in a particular corner of a pixel that overlaps an active region of a switching element, and the rejection does not even attempt to show where Sato describes or suggests this feature. Accordingly, applicant requests reconsideration and withdrawal of this rejection for at least this reason, and for the reasons discussed above.

Claims 4-7, 11-13 and 26-31, including independent claims 4, 5, 11, 26 and 29, have been rejected as being obvious over Sato in view of Ueda (U.S. Patent No. 5,459,596), Miyazawa (U.S. Patent No. 5,781,260), Hanazawa (U.S. Patent No. 5,835,171) and Koseki (U.S. Patent No. 5,345,324).

With respect to claim 4, applicant requests reconsideration and withdrawal of this rejection because neither Sato, Ueda, Miyazawa, Hanazawa, Koseki, nor any proper combination of the five describes or suggests an orientation film formed on the pixel electrode and having a surface that has been rubbed in one direction from one corner of the pixel and an auxiliary capacitor positioned so as to cover a part of the pixel including the one corner, as recited in claim 4. As noted above, the rejection concedes that Sato does not disclose an orientation film having a surface rubbed in one direction from one corner of the pixel. The rejection then relies on Ueda,

Miyazawa, Hanazawa and Koseki as allegedly showing that it was known to rub an orientation film in this manner.

However, as has been previously noted, while Ueda, Miyazawa, Hanazawa and Koseki describe rubbing operations, none of Ueda, Miyazawa, Hanazawa, and Koseki describes or suggests any advantage to beginning such a rubbing operation in a particular region of a pixel (e.g., a corner or a region comprising a corner of a pixel) in which a capacitor and/or a switching element is formed, and accordingly, none of these references would have provided any motivation to combine the references in the manner needed to arrive at the claimed subject matter. In particular, even assuming for sake of argument that one of the references would have motivated one of ordinary skill in the art to perform a rubbing operation in forming the device of Sato, none of the references would have provided any motivation to rub an orientation film in one direction from one corner of the pixel that is covered by the auxiliary capacitor, as recited in claim 4.

Indeed, as has previously been noted, Koseki teaches away from such a rubbing operation. In particular, as has been noted in prior replies, Koseki, at, for example, FIG. 1, illustrates a thin-film transistor formed in an opposite corner from that at which rubbing begins. Thus, Koseki discloses rubbing toward a TFT, and, therefore, teaches away from the proposed combination of Sato with Koseki.

As has also been previously noted, arrangements such as the one recited in claim 4 result in an increase in the effective aperture area, which constitutes an unexpected result that illustrates the non-obviousness of the claimed subject matter (see the application at, for example, page 7, lines 1-7; page 14, line 4-11; and page 18, lines 15-22). In this regard, applicant again submits that the sheer number of references presently cited against the claims weigh in favor of patentability. Though the action seeks to establish that the claimed rubbing operation was common and conventional, in attempting to do so, the action actually establishes that practitioners of the rubbing operation did not recognize either (a) the recited feature of placing a capacitor and/or switching element in a corner from which the rubbing operation began, (b) the existence of disclination in this corner, or (c) the unexpected result and advantage that an effective aperture area may be increased by virtue of this approach.

Accordingly, for at least these reasons, the rejection of claim 4 should be withdrawn.

Independent claims 5, 11, 26 and 29 recite similar features and, as such, these claims, as well as their dependent claims, should be allowed for the reasons discussed above. In particular, claim 5 recites liquid crystal molecules oriented by rubbing in one direction from one corner of the pixel, that a disclination of liquid crystal molecules occurs in a region including the one corner, and that the region overlaps with a capacitor and a thin film transistor. Claims 11, 26 and 29 further recite that the region also overlaps with a thin film transistor.

Applicant submits that all claims are in condition for allowance.

Enclosed is a $450.00 check for the Two-Month Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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Date: Nov. 2, 2005

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